QUADRATISCHE FORMELN
ÜBUNGEN

Löse die Klammer anhand der quadratischen Formeln auf!

$(a+1)^2 =$	$(f+6)^2 =$	$(k-1)^2 =$	$(p-6)^2 =$
$(b+2)^2 =$	$(g+7)^2 =$	$(l-2)^2 =$	$(q-7)^2 =$
1. $(c+3)^2 =$	2. $(h+8)^2 =$	3. $(m-3)^2 =$	4. $(r-8)^2 =$
$(d+4)^2 =$	$(i+9)^2 =$	$(n-4)^2 =$	$(s-9)^2 =$
$(e+5)^2 =$	$(j+10)^2 =$	$(o-5)^2 =$	$(t-10)^2 =$
$(2a+1)^2 =$	$(3f+6)^2 =$	$(7k-1)^2 =$	$(2p-6)^2 =$
$(3b+2)^2 =$	$(4g+7)^2 =$	$(5l-2)^2 =$	$(3q-7)^2 =$
5. $(4c+3)^2 =$	6. $(5h+8)^2 =$	7. $(8m-3)^2 =$	8. $(4r-8)^2 =$
$(5d+4)^2 =$	$(4i+9)^2 =$	$(7n-4)^2 =$	$(3s-9)^2 =$
$(6e+5)^2 =$	$(3j+10)^2 =$	$(2o-5)^2 =$	$(2t-10)^2 =$

$\left(\frac{1}{2}a+1\right)^2 =$ $\left(\frac{2}{3}f+6\right)^2 =$ $\left(\frac{1}{2}p-\frac{2}{3}\right)^2 =$ $\left(7k-\frac{1}{2}\right)^2 =$

$\left(\frac{1}{2}b+2\right)^2 =$ $\left(\frac{2}{5}g+7\right)^2 =$ $\left(\frac{2}{3}q-\frac{3}{4}\right)^2 =$ $\left(5l-\frac{3}{5}\right)^2 =$

9. $\left(\frac{1}{3}c+3\right)^2 =$ 10. $\left(\frac{3}{4}h+8\right)^2 =$ 11. $\left(\frac{3}{4}r-\frac{4}{5}\right)^2 =$ 12. $\left(8m-\frac{3}{4}\right)^2 =$

$\left(\frac{1}{3}d+4\right)^2 =$ $\left(\frac{4}{3}i+9\right)^2 =$ $\left(\frac{4}{3}s-\frac{9}{2}\right)^2 =$ $\left(7n-\frac{5}{7}\right)^2 =$

$\left(\frac{1}{4}e+5\right)^2 =$ $\left(\frac{3}{5}j+10\right)^2 =$ $\left(\frac{5}{4}t-\frac{1}{5}\right)^2 =$ $\left(2o-\frac{3}{4}\right)^2 =$

$(a-1)(a+1) =$

$(b-2)(b+2) =$

13. $(c-3)(c+3) =$

$(d-4)(d+4) =$

$(e-5)(e+5) =$

14. Umgekehrt:

$f^2-36 =$

$g^2-49 =$

$h^2-64 =$

$i^2-81 =$

$j^2-100 =$

$4k^2-1 =$

$9l^2-4 =$

15. $25m^2-16 =$

$36n^2-81 =$

$100p^2-64 =$

Welche vollstädige Quadraten sind die folgenden Ausdrücke?

$a^2+2a+1=(\mathbf{a}+\mathbf{1})^2$ $f^2-16f+64 =$ $4l^2+4l+1 =$

$b^2-4b+4 =$ $g^2+20b+100 =$ $9m^2-6m+1 =$

16. $c^2+10c+25 =$ 17. $h^2-18h+81 =$ 18. $4n^2+12n+9 =$

$d^2-12d+36 =$ $j^2+14j+49 =$ $9o^2-24o+16 =$

$e^2+8e+16 =$ $k^2-6k+9 =$ $16p^2+40p+25 =$

$25q^2 - 20q + 4 =$

$16r^2 + 24r + 9 =$

19. $9s^2 - 30s + 25 =$

$36t^2 + 60t + 25 =$

$16u^2 - 56u + 49 =$

Welche vollstädige Quadraten sind die folgenden Ausdrücke?

1. $d^2 + 4d + 4 =$
2. $b^2 - 2b + 1 =$
3. $s^2 - 6s + 9 =$
4. $s^2 + 12s + 36 =$
5. $t^2 + 10t + 25 =$
6. $a^2 + 2a + 1 =$
7. $m^2 - 16m + 64 =$
8. $c^2 - 12c + 36 =$
9. $k^2 - 8k + 16 =$
10. $u^2 + 14u + 49 =$
11. $c^2 - 4c + 4 =$
12. $u^2 - 16u + 64 =$
13. $t^2 + 18s + 81 =$
14. $9z^2 + 6z + 1 =$
15. $25e^2 + 10e + 1 =$
16. $16x^2 + 8x + 1 =$
17. $4y^2 - 4y + 1 =$
18. $4b^2 - 8b + 4 =$
19. $4b^2 + 12b + 9 =$
20. $4c^2 - 20c + 25 =$
21. $9a^2 + 12a + 4 =$
22. $9b^2 - 30b + 25 =$
23. $16k^2 + 24k + 9 =$
24. $16m^2 - 40k + 25 =$
25. $9p^2 + 36p + 36 =$

Ergänze die folgenden Ausdrücke auf ein vollständiges Quadrat!

26. $a^2 - 12a + \mathbf{36} = (\mathbf{a} - \mathbf{6})^2$
27. $x^2 - 16x + ... = ...$
28. $x^2 - 14x + ... = ...$
29. $b^2 - 10b + ... = ...$
30. $y^2 - 8y + ... = ...$
31. $y^2 - 12y + ... = ...$
32. $z^2 - 14z + ... = ...$
33. $b^2 - 16b + ... = ...$
34. $x^2 + 20x + ... = ...$
35. $b^2 - 14b + ... = ...$
36. $a^2 + 18a + ... = ...$
37. $c^2 - 18c + ... = ...$
38. $a^2 + 12a + ... = ...$
39. $b^2 - 20b + ... = ...$
40. $y^2 - 10y + ... = ...$
41. $a^2 - 10a + ... = ...$
42. $9x^2 - 30xy + ... = ...$
43. $9a^2 + 24a + ... = ...$
44. $25a^2 - 40a + ... = ...$
45. $36a^2 - 48ab + ... = ...$

46. $36x^2 - 60xy + \ldots\ldots = \ldots\ldots$

47. $16b^2 - 48bc + \ldots\ldots = \ldots\ldots$

48. $4x^2 - 16x + \ldots\ldots = \ldots\ldots$

49. $25b^2 - 70b + \ldots\ldots = \ldots\ldots$

50. $16c^2 - 12c + \ldots\ldots\ldots = \ldots\ldots\ldots$

51. $9z^2 + 30z + \ldots\ldots\ldots = \ldots\ldots\ldots$

52. $x^2 + 2x - 15 = (\mathbf{x} + \mathbf{1})^2 - \mathbf{16}$

53. $x^2 + 6x + 5 =$

54. $x^2 - 8x + 7 =$

55. $d^2 + 4d + 5 =$.

56. $b^2 - 2b + 7 =$

57. $s^2 - 6s + 5 =$

58. $s^2 + 12s + 32 =$

59. $t^2 + 10t + 5 =$

60. $a^2 + 2a + 5 =$

61. $m^2 - 16m + 80 =$

62. $c^2 - 12c + 20 =$

63. $k^2 - 8k =$

64. $c^2 - 4c =$

65. $u^2 - 16u =$

Kürze die nachstehenden algebraischen Büche!

66. $\dfrac{a^2 - b^2}{5a - 5b} =$

67. $\dfrac{2ab - a^2}{4b^2 - a^2} =$

68. $\dfrac{x^2 - 25}{x^2 + 10x + 25} =$

69. $\dfrac{a^2 + 2ab + b^2}{a^2b - ab^2} =$

70. $\dfrac{4y^2 + 16y}{y^2 + 8y + 16} =$

71. $\dfrac{x^2 + 4x + 4}{x^2 - 4} =$

72. $\dfrac{a^3 + 12a^2 + 36a}{a^2 - 36} =$

73. $\dfrac{x^3 - 4x}{x^2 - 4x + 4} =$

74. $\dfrac{6x^4 + 12x^3}{3x^2 - 12} =$

75. $\dfrac{a^2b^3 - 9b^5}{a^2 - 3ab} =$

76. $\dfrac{a^2b - 4b^3}{a^2 - 2ab} =$

77. $\dfrac{x^2 - y^2}{x^2 + 2xy + y^2} =$

78. $\dfrac{2x - 2y}{4x^3 - 4xy^2} =$

79. $\dfrac{3a^2 - 3b^2}{a^2 + ab} =$

80. $\dfrac{x^2 - 9}{4x^3 - 36x} =$

81. $\dfrac{2ab - a^2}{4b^2 - a^2} =$

82. $\dfrac{a^2 + 6a + 9}{4a^2 - 12a} =$